ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

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ATTACHMENT:	Supplemental Information

EXECUTIVE SUMMARY

Washington Nuclear Project-2
NRC Inspection Report No. 50-397/99-07

This information covers a 6-week period of resident inspection.

Operations

- The root cause for the inadvertent draindown of the spent fuel pool skimmer surge tank and the inadvertent draindown of the reactor pressure vessel was poor control room operator board awareness and monitoring of key parameters in the plant. This is a Severity Level IV violation of Technical Specification 5.4.1.a, with two examples, which is being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy, and is in the licensee's corrective action program as Problem Evaluation Requests 299-0882 and 299-1021 (Section O1.1).

- Licensee requirements for establishment of secondary containment prior to moving new fuel into the spent fuel pool in Mode 4 were unclear. Operations responded promptly and conservatively. The licensee conducted a thorough 10 CFR 50.59 safety evaluation. The resultant procedure change clarified conditions required for movement of all loads over the spent fuel pool (Section O2.1).

- The licensee's investigation of a valve out of position was in-depth and promptly performed. The licensee identified several other problems and corrective actions in valve position verification processes. Minor tagging and clearance order process problems were also identified and corrective actions were initiated (Section O7.1).

- Licensee actions with respect to interpretation and application of shutdown Technical Specifications were focused on reactor and public safety concerns. Conduct of management meetings fostered open and frank discussions that were focused on reactor safety and compliance with the intent of Technical Specification Bases (Section O7.2).

Maintenance

- Maintenance work observed by the inspectors was conducted in a manner that ensured reliable, safe operation of the station. More effective and frequent management observation of maintenance activities was observed (Section M1.1).

- Surveillance testing was generally conducted in accordance with the licensee's programs and Technical Specifications (Section M1.2).

- The licensee made comprehensive repairs to the turbine building roof to prevent further rainwater intrusion into the turbine building. However, interim protective measures, during installation, were not totally successful since a sudden rainstorm resulted in a small fire in a lighting panel (Section M2.1).

Engineering

- A Severity Level IV violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," with three examples was identified. This Severity Level IV violation is being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy.

  (1) Incorrect overcurrent relay setpoints were installed on four Division II safety-related pump breakers when correct design information was available but not accurately translated into procedures (Problem Evaluation Request 299-1193).

  (2) Technical Specification 4.3.1.2.b allowed less restrictive spacing of new fuel assemblies in the new fuel vault than that required by plant procedures and analysis (Problem Evaluation Request 299-1238).

  (3) Final Safety Analysis Report Section 9.1.1.3.2 stated, "lifting bail will yield at a pull up force less than 1000 lb," however, Siemens and ASEA Brown Boveri fuel lifting bails yield at a pull up force between 1500 and 1700 pounds (Problem Evaluation Requests 299-1289) (Sections E1.1 and E1.2).

- The licensee's response to address concerns of potential new fuel and vault damage during a seismic event or handling error with the new fuel basket were conservative and prompt (Section E1.2).

- The licensee identified and took appropriate corrective action for several new fuel handling and receipt process problems (Section E1.3).

- An unresolved item was identified related to a new fuel manufacturing defect. The licensee identified missing external compression springs on two new fuel assemblies. This item is unresolved pending NRC review of the facilities resolution of this condition (Section E1.3).

Plant Support

- The inspectors observed that radiological controls were generally good and that the facility appropriately identified an adverse trend in contractor radiation work practices (Section R1.1).

- Plant housekeeping was generally good (Section F8.1).

Report Details

Summary of Plant Status

Unit 2 remained in Mode 4 through the entire inspection period for a planned fuel savings dispatch outage.

I. OPERATIONS

O1 Conduct of Operations

O1.1 Reactor Pressure Vessel (RPV) and Spent Fuel Pool Level Control

a. Inspection Scope (71707)

On April 24, 1999, spent fuel pool skimmer surge tank level decreased to the low-low level annunciator setpoint over a period of approximately 6 hours. On May 11, 1999, while conducting a routine procedure to lower RPV level, level decreased from 78 to 23 inches. The inspectors reviewed the circumstances and licensee followup actions for these two occurrences of loss-of-level control.

b. Observations and Findings

On April 24, 1999, at 5:50 p.m., the "Skimmer Surge Tank A Level Low-Low" annunciator alarmed in the control room. The shutdown tour operator, who had last locally monitored the spent fuel pool level 6 hours earlier, was dispatched to investigate the annunciator. The spent fuel pool level was at the weir, with no overflow, and the skimmer surge tank was empty. The licensee investigated the loss of level and found that, because of the unavailability of automatic skimmer surge tank makeup caused by a service air outage, and a leaking cross-connect valve to the residual heat removal (RHR) system, inventory in the spent fuel pool/skimmer surge tank system was being lost to the RHR system. The shutdown tour operator had been given direction to periodically monitor spent fuel pool level but had not been directed specifically to monitor for proper weir flow nor skimmer surge tank level.

The licensee corrective actions in Problem Evaluation Request (PER) 299-0882 included a change to Procedure 2.8.1A, "Planned Control and Service Air Outage," to require frequent monitoring of the spent fuel pool weir in anticipation of loss of level in the skimmer surge tank. Monitoring of spent fuel pool system level indications was inadequate during the service air outage to mitigate the loss of skimmer tank level prior to the low-low level annunciator.

Facility Procedure 2.8.5, "Fuel Pool Cooling and Cleanup System," Revision 28, Section 5.1.5, required skimmer surge tank level to be maintained. Level in the surge tank provides the net positive suction head for the fuel pool cooling pumps to circulate spent fuel pool water and provide for decay heat removal from the spent fuel. Failure to adequately monitor weir flow and the resultant loss of level in the skimmer surge tank is the first of two examples of a violation of Technical Specification 5.4.1.a. which states, in part, that written procedures shall be established, implemented, and maintained

covering . . . the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Regulatory Guide 1.33, Appendix A, lists, in part, procedures for operating the fuel pool purification and cooling system. This Severity Level IV violation of Technical Specification 5.4.1.a is being treated as an example of a noncited violation (NCV), consistent with Appendix C of the NRC Enforcement Policy (50-397/9907-01).

On May 11, 1999, at 10:39 a.m., the reactor operator notified the shift supervisor and commenced a normal letdown of the RPV to lower level from an initial level of 77.3 inches. The level band had been established at 60 to 80 inches. This evolution had been conducted approximately every 18 hours during the fuel savings dispatch outage and normally required approximately 15 minutes to complete. The evolution was controlled by Section 5.13.34 of Procedure 2.4.2, "Residual Heat Removal," Revision 39, and required opening the in-use RHR heat exchanger vent valves to divert reactor coolant to the suppression pool. Initial suppression pool level was 14.57 inches.

Approximately 39 minutes after commencing the letdown, the "Injection Valve Closure RPV Level High +54.5 inches" annunciator cleared. The control room operator announced the alarm, then secured the letdown by closing the RHR heat exchanger vent valves. RPV level was reading 23 inches on the upset level instrument and 49 inches on the narrow range monitor. Suppression pool level indicated 16.78 inches. These level changes indicated that approximately 10,000 gallons of reactor coolant had been let down from the RPV to the suppression pool and actual RPV level changed from 75 inches to 37 inches, which was approximately twice the typical volume of letdown.

The control room operators commenced restoring level with Control Rod Drive (CRD) Pump P-1A, using Procedure 2.1.1, "Control Rod Drive System," Revision 26, and restored level to within the normal level band at 1:04 p.m. The restoration of level was slow and controlled to minimize temperature changes in the RPV. The temperature band had been established at 95 to 100°F, in support of the shutdown safety plan, and compensatory action for designation of an alternate method of decay heat removal. The low temperature and small control band of 95 to 100°F was administratively established to maximize time to boil and time available to restore the second train of shutdown cooling.

The licensee informed the NRC inspectors of the loss of level control at approximately 2:30 p.m. The licensee stated that the timeliness of this notification did not meet management expectations, and, although not required by regulation, should have occurred immediately after the level restoration had begun. The licensee initiated PER 299-1021, convened an Incident Review Board (IRB), and initiated an immediate corrective action to log reactor vessel level every 5 minutes when conducting letdowns.

The IRB conducted interviews with the control room staff and reviewed the applicable procedures, logs, and other significant documents associated with the event. The IRB concluded that the procedure for conducting the letdown was performed properly; however, the control room operator failed to monitor RPV level adequately to ensure timely isolation of letdown. Interviews with the control room operator indicated his primary focus was on maintaining RPV temperature in the established band of 95 to

100°F. Additionally, the shift supervisor and the other control room reactor operator were involved in communications and control board monitoring in support of other maintenance evolutions in progress.

The licensee conducted a formal root cause analysis of the RPV draindown and concluded that the root cause was operator inattention. Other contributing factors were noted, including lack of command and control, lack of crew focus, and an unnecessarily small reactor temperature band that challenged operations and distracted the control room operator. The inspectors reviewed the root cause analysis and agreed with the conclusions. The root cause analysis was thorough in scope, detailed and clear in its conclusions, and outlined several corrective actions that appeared to be responsive to the root and contributing causes identified.

Facility Procedure, 1.3.1, "WNP-2 Operating Policies, Programs and Practices," Revision 39, Section 4.14.3.b, for control room operator responsibilities states, "Maintains responsibility for overall plant operations. The principal concern is monitoring of key primary plant parameters relating to reactivity control, vessel level control, and decay heat removal." Failure of the control room operators to effectively monitor RPV level is the second example of a violation of Technical Specification 5.4.1.a. which states, in part, that written procedures shall be established, implemented, and maintained covering . . . the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Regulatory Guide 1.33, Appendix A, lists, in part, procedures for authorities and responsibilities for safe operation and shutdown. This Severity Level IV violation of Technical Specification 5.4.1.a is being treated as an example of an NCV, consistent with Appendix C of the NRC Enforcement Policy (50-397/9907-01).

c. Conclusions

The root cause for the inadvertent draindown of the spent fuel pool skimmer surge tank and reactor pressure vessel was poor control room operator board awareness and monitoring of key parameters in the plant. This is a Severity Level IV violation of Technical Specification 5.4.1.a, with two examples, which is being treated as an NCV, consistent with Appendix C of the NRC Enforcement Policy, and is in the licensee's corrective action program as Problem Evaluation Requests 299-0882 and 299-1021.

O2 Operational Status of Facilities and Equipment

O2.1 Movement of New Fuel Over Irradiated Fuel without Secondary Containment

a. Inspection Scope (71707)

The resident inspectors observed the licensee transfer new fuel from the new fuel vault to the spent fuel pool. At the time, the plant was in Mode 4 and secondary containment was open and technically inoperable. The inspectors were concerned that a dropped new fuel assembly could damage an irradiated assembly in the spent fuel pool and result in a direct release of radioactivity to the environment. The inspectors questioned

the licensee as to the appropriateness of this action and reviewed related procedures, Technical Specifications, and the licensee's response.

b. Observations and Findings

Following the inspectors' comments on movement of new fuel over irradiated fuel without an operable secondary containment, licensee senior managers agreed the concerns required further investigation and evaluation. The operations manager issued a night order to suspend all new fuel movement while secondary containment was inoperable. PER 299-0952 was assigned to track the issue.

Technical Specifications do not address movement of new fuel or other heavy loads over the spent fuel pool, and Technical Specification 3.4.6.1 required secondary containment to be operable in Mode 4 only when moving irradiated fuel, performing core alterations, or operations with a potential to drain the reactor vessel. Licensee Controlled Specification 1.9.2 provides height and weight restrictions for movement of loads over the spent fuel pool with irradiated fuel in the spent fuel pool but also assumes a functional secondary containment and standby gas treatment system.

The purpose of a functional secondary containment was to allow the standby gas treatment system to remove 99 percent of the radioactive iodine released in a fuel handling accident prior to any release from the containment. The design basis fuel assembly drop accident assumed a functional secondary containment. The licensee estimated that after 90 subcritical days, the radioactive decay of iodine in the spent fuel assemblies in the spent fuel pool would reduce the source term to less than 0.05 percent of the initial level assumed in the design basis fuel accident as described in the Final Safety Analysis Report (FSAR).

The licensee conducted a 10 CFR 50.59 safety evaluation (SE-99-0030) and concluded that, given a 90-day cooling period for the irradiated fuel, the safety function of secondary containment and standby gas treatment was met. Additionally, the licensee verified that movement of new fuel met the heavy load restrictions of Licensee Controlled Specification 1.9.2. The inspectors reviewed the safety evaluation and agreed with the licensee's conclusions.

Procedure 1.3.40, "Outage Mode Change or Refueling Activity Readiness Evaluation," Revision 12, was changed to specify that when moving any load over or in the spent fuel pool, the conditions for moving irradiated fuel must be met. If the conditions are not met, then load movement may continue, provided the irradiated fuel has been subcritical for at least 90 days, sufficient systems and instrumentation are available to monitor for an offsite release, control room air conditioning is functional, and restrictions of Licensee Controlled Specification 1.9.2 are met.

c. Conclusions

Licensee requirements for establishment of secondary containment prior to moving new fuel into the spent fuel pool in Mode 4 were unclear. Operations responded promptly and conservatively. The licensee conducted a thorough 10 CFR 50.59 safety

evaluation. The resultant procedure change clarified conditions required for movement of all loads over the spent fuel pool.

O7 Quality Assurance in Operations

O7.1 Configuration Control

a. Inspection Scope (71707)

The inspectors performed plant tours to verify proper clearance, tagging, and labeling of plant equipment. The inspectors reviewed operations response to two valves identified as out of position. The inspectors reviewed the facility corrective actions in response to other tagging and clearance process related PERs The inspectors also reviewed portions of the following procedures: SWP-OPS-03, "Plant Clearance Orders," Revision 3; Procedure 3.1.6, "Startup Instrument Rack Valve Line-Up," Revision 13; OSP-CAC/IST-Q702, "CAC Valve Operability," Revision 1; Operating Instruction (OI) 25, "Valve Position Verification in Rad Zones and Overhead Areas," Revision C.

b. Observations and Findings

During routine plant tours, the inspectors identified two missing valve identification labels, one temporary modification request (TMR) tag that was not attached appropriately, and a gauge isolation valve out of position in the reactor core isolation cooling (RCIC) system. The licensee took appropriate action to label the identified valves, attach the TMR tag, and initiated PER 299-1085 to document the mispositioned valve. The RCIC valve was a normally closed gauge isolation that was partially open. The position of this valve would not affect the operability or integrity of the RCIC system. This failure constitutes a violation of minor significance and is not subject to formal enforcement action.

The licensee identified a valve out of position in the containment atmosphere control system and documented it in PER 299-0757. The licensee promptly interviewed applicable personnel, reviewed plant records and logs, and evaluated associated physical evidence. The investigation was thorough and broad in scope and identified several corrective actions to be taken to help prevent recurrence of similar problems. These actions included changing procedure use requirements, improving and clarifying component identification, and improving the tagging process. The licensee further investigated compliance with OI-25 verification requirements and management expectations associated with safety-related valve position verification in high exposure areas, and documented the efforts in PER 299-0853.

On May 17, 1999, the licensee identified a potential clearance order tagging problem and convened an IRB to investigate. The oncoming swing shift had found several clearance order red tags lying on the floor inside remote shutdown Panel E-CP-C61/P001. The red tags were for fuse blocks that had been removed to support testing. The IRB conducted interviews and investigated the panel configuration and tagging methods used. The IRB concluded that the tags had been knocked off

several times by the previous work shift electricians and had been properly rehung by operations personnel each time after notification by the job foreman at the panel. However, at the end of the day shift, the technicians left the panel with the red tags on the floor with the assumption that operations had been contacted and would rehang the tags again. The tags were not rehung until the swing shift entered the panel and reported the red tags on the panel floor. PER 299-1079 documented the events.

The IRB noted that the design of the fuse blank "pinwheel" was inadequate as a tag holder and its use should be discontinued and that a consistent method for hanging tags should be developed and reinforced at training. Currently, tags are hung on valves and breaker panels using tape, string, wire, and/or tie wraps. The IRB concluded that this was a tagging process problem and not a human performance or knowledge problem. The inspectors agreed with the IRB conclusions.

c. Conclusions

The licensee's investigation of a valve out of position was in-depth and promptly performed. The licensee identified several other problems and corrective actions in valve position verification processes. Minor tagging and clearance order process problems were also identified and corrective actions were initiated.

O7.2 Emergency Core Cooling, Shutdown Power Requirements, and Shutdown Cooling Technical Specifications

a. Inspection Scope (71707)

The inspectors walked down control room panels, questioned operators, and observed management meeting discussions concerning maintenance and application of Technical Specifications for shutdown cooling and emergency core cooling power requirements.

b. Observations and Findings

Maintenance and testing being performed on plant components required operators to analyze the upcoming plant conditions for Technical Specifications applicability and interpretation. For example, the maintenance of shutdown cooling as required by Technical Specification 3.4.10 was challenged several times as combinations of divisional power outages, diesel generator maintenance, and operability of RHR, service water and recirculation pumps changed during the outage. The inspectors questioned control room operators on several occasions during the outage as to how the Technical Specification was being met, particularly when shutdown cooling was removed from service, and each responded consistently and displayed strong knowledge of the Technical Specification.

The inspectors observed conduct of a management meeting on June 7, 1999, to discuss application and interpretation of Technical Specification 3.5.2, "ECCS-shutdown," and how it related to Technical Specification 3.8.2, "AC Sources-shutdown," and Technical Specification 3.8.8, "Distribution

Systems-shutdown." Two strongly opposed viewpoints were openly expressed at the meeting and consequences of each interpretation were also expressed. The need to meet the intent of the Technical Specifications and Bases was emphasized. The meeting also reviewed options for declaring Pump RHR-2C operable following extensive troubleshooting and successful operability testing although a cause for the pump trip events had not been determined and they were not reproducible. Again, two strongly opposing views were openly expressed. Operations department representatives typically held the more conservative interpretation, whereas maintenance and outage representatives proposed the more compliance-oriented viewpoint. Ultimately, both issues were thoroughly discussed and a course of action outlined at the conclusion of the meeting.

c. Conclusions

Licensee actions with respect to interpretation and application of shutdown Technical Specifications were focused on reactor and public safety concerns. Conduct of management meetings fostered open and frank discussions which were focused on reactor safety and compliance with the intent of Technical Specification Bases.

II. MAINTENANCE

M1 Conduct of Maintenance

M1.1 General Comments - Maintenance

a. Inspection Scope (62707)

The inspectors observed or reviewed portions of the following work activities:

	Work Order No.	Description
•	WO NCL/01	Main Turbine
•	WO GMG-006	CRD-V-34 Freeze Seal and Replacement
•	WO PTV3	Excess Flow Check Valve Testing
•	WO RWL8, 9	Division I Diesel Generator 6-year Maintenance

b. Observations and Findings

Maintenance work observed was performed according to the work instructions. The work instructions were present at the work sites and in active use. The inspectors observed supervisors and system engineers monitoring job progress and that quality control personnel were present when required. The inspectors found that maintenance was being conducted in a manner sufficient to ensure reliable, safe operation of the station, and plant equipment.

The inspectors noted by reviewing maintenance human performance data that field observations and training observations by supervisors and management personnel had

increased significantly in the last 4 months and that a defined observation criterion was used.

c. Conclusions

Maintenance work observed by the inspectors was conducted in a manner that ensured reliable, safe operation of the station. More effective and frequent management observation of maintenance activities was observed.

M1.2 General Comments - Surveillance

a. Inspection Scope (61726)

The inspectors observed or reviewed portions of the following test activities:

Surveillance Number	Description
• OSP-CRD/IST-Q107	Scram Discharge Volume Vent and Drain Valve Operability
• OPS-INST-B701	Remote Shutdown Panel Operability
• TSP-DG2/LOCA-B501	Standby Diesel Generator DG2 LOCA Test
• TSP-DG2/LOP-B501	Standby Diesel Generator DG2 Loss of Power Test
• ISP-EFC-B103-6	Excess Flow Check Valve Testing

b. Observations and Findings

In general, all surveillance testing observed was conducted satisfactorily in accordance with the licensee's procedures, programs, and Technical Specifications. The inspectors found that testing was conducted in a well-controlled manner with communication between the operators and supervision appropriate for the circumstances. The inspectors found that surveillance testing of station safety equipment was satisfactory.

c. Conclusions

Surveillance testing of station safety systems was conducted in accordance with the licensee's programs and Technical Specifications.

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 Turbine Building Roof Repair

a. Inspection Scope (71707)

On May 17, 1999, at approximately 10:18 a.m., the control room was notified that smoke was coming from the 480 VAC Lighting Panel E-LP-2B-A in the turbine building. The inspectors reviewed the licensee's response to the fire, including personnel interviews, control room log reviews, and inspection of the area surrounding Lighting Panel E-LP-2B-A.

b. Observations and Findings

Because of rain that morning and a previously wind-damaged turbine building roof, water had leaked down the inside walls of the turbine building, including the wall where Lighting Panel E-LP-2B-A was mounted. An area of approximately 25 square feet on the floor below the lighting panel was wet with standing water.

Following a report to the control room of a smoke smell, two operators were dispatched to the turbine building to investigate. Personnel already in the turbine building near the smoking panel opened it and observed flames coming from the panel. After two unsuccessful attempts to extinguish the fire with the panel still energized, personnel opened the main breaker on the panel with a wooden stick and then successfully extinguished the fire with a portable dry chemical agent extinguisher. The entire event took approximately 3 minutes. The fire brigade leader established a 30-minute firewatch.

The inspectors toured the upper turbine building deck on the same elevation as the lighting panel. Several areas had standing water of various dimensions on the floor. Active efforts were observed to contain, capture, and dry the rainwater from the affected areas. Standing water was also present under and around the low pressure turbine casing staging area that had been roped off as a radiologically controlled contaminated area. Rainwater dripping from the roof was observed wetting the outside of the casing, which was not considered contaminated, and collecting underneath and around the casing. Health physics personnel had conducted surveys of the area to confirm no movement of contamination from underneath the casing.

The licensee generated PER 299-1073 and Work Request (WR) 99003014 to document the lighting panel damage. The licensee also performed notifications as required by OI-34, "Notifications," Revision A, and Procedure 1.10.1, "Notifications and Reportable Events," Revision 19. The lighting panel did not supply any safety-related loads and resulted in loss of some lighting in the turbine building. The panel remained de-energized through the remainder of this report period.

The supervisor in charge of repairing the turbine building roof stated that roofing repairs had been underway for approximately 1 week, but not yet in the vicinity above the

damaged lighting panel. The estimated completion date for the roof repairs was June 23, 1999. The turbine building roof was being replaced due to chronic leakage problems which became more than minor following a windstorm in November 1998. This replacement work of the turbine building roof was extensive and involved removing all of the old roofing material, except the corrugated metal layer that was exposed to the turbine building interior, and rebuilding the new roof. The facility had previously taken some measures to cover equipment in the turbine building on an equipment-importance priority basis; however, several of the covers had been removed for maintenance and continuing plant operation. On the morning of the fire, covers were being reinstalled as the need was identified and equipment priority dictated; however, given the sudden and intense nature of this particular rainstorm, covers had only been reinstalled on the turbine building heating, ventilation, and air conditioning panel when the fire was reported.

c. Conclusions

The licensee made comprehensive repairs to the turbine building roof to prevent further rainwater intrusion into the turbine building. However, interim protective measures, during installation, were not totally successful since a sudden rainstorm resulted in a small fire in a lighting panel.

III. ENGINEERING

E.1 Conduct of Engineering

E1.1 Overcurrent Relay Design Control

a. Inspection Scope (37551)

The breaker for Pump RHR-2C failed to remain closed during surveillance testing. The inspectors observed the licensee's actions to diagnose the cause of the failed breaker and corrective actions associated with that effort.

b. Observations and Findings

On May 26, following successful completion of the Division II emergency diesel generator loss-of-coolant accident (LOCA) test, the Pump RHR-2C breaker on Switchboard SM-8 closed following a proper sequencer start signal during the Division II emergency diesel generator loss of power (LOP)/ LOCA integrated test, but then tripped open approximately 40 milliseconds later. PER 299-1166 was written and the breaker was investigated with no conclusions as to the cause of the failure to remain closed. After several cycles of the breaker for troubleshooting, the LOP/LOCA integrated test was performed again and the breaker closed properly.

The breaker was again cycled several times prior to conduct of the Pump RHR-2C operability surveillance, which was conducted on May 30. During the operability surveillance, the pump breaker closed following a proper start signal then reopened

after approximately 120 milliseconds. PER 299-1189 was written to document the event.

During subsequent troubleshooting, a bench test of the overcurrent relays showed that the current setpoints were set too low. The as-found setpoints were 31.5 amps, whereas the desired setpoint by plant design was 45 amps.

A review of Electrical Print E514 and the computerized record management system (RMCS) indicated that Plant Modification Record (PMR) 85-0528-0 was pending and had not been installed on Division II. The modification was statused as pending because the engineering organization knew that the setpoints in PMR 85-0528-0 were incorrect. The licensee stated that plant modifications with a pending status are not ready to be installed. However, the relays had been recalibrated on May 8, 1999, to the setpoints specified in the PMR. The licensee immediately returned the relay setpoints to the original value and retested the affected components. In addition to Pump RHR-2C, the affected components included: Service Water (SW) Pump 2B, Pump RHR-2B, and Pump CRD-2B.

Failure to correctly translate design information into plant procedures is the first example of a violation of 10 CFR Part 50, Appendix B, Criterion III, Design Control. This Severity Level IV violation is being treated as a NCV, consistent with Appendix C of the NRC Enforcement Policy (50-397/9907-02).

PER 299-1193 was written to enter the use of the incorrect overcurrent relay setpoints into the facility corrective action program. The low overcurrent setpoints were determined to be the cause for the second instance of Pump RHR-2C breaker closure failure, which resolved PER 299-1189. Troubleshooting on the breaker of Pump RHR-2C to resolve PER 299-1166 continued through the end of the inspection period with Pump RHR-2C remaining inoperable. A potential failure mode involving five relays was identified, and the licensee plans to replace those relays and perform appropriate postmaintenance testing prior to declaring Pump RHR-2C operable.

c. Conclusions

Incorrect overcurrent relay setpoints were installed on four Division II safety-related pump breakers when correct design information was available but not accurately translated into procedures. This is the first example of a Severity Level IV violation of 10 CFR Part 50, Appendix B, Criterion III, Design Control. This Severity Level IV violation is being treated as a NCV, consistent with Appendix C of the NRC Enforcement Policy. This example is in the licensee's corrective action program as PER 299-1193.

E1.2 Discrepancies Between New Fuel Vault FSAR Descriptions, Technical Specifications, and Current Operations

a. Inspection Scope (37551)

The inspectors reviewed portions of PMR 94-0104-0, "Refuel Floor Modification to Receive ASEA Brown Boveri (ABB) Fuel and associated safety analysis"; SWP-IRP-01,

"Plant Operations Committee," Revision 1; and others as referenced below. In addition, the inspectors walked down the new fuel inspection vault and new fuel handing equipment and observed new fuel handling operations.

b. Observations and Findings

The inspectors identified several inconsistencies between the new fuel vault FSAR description, Technical Specifications, and current plant operations:

1. Technical Specification 4.3.1.2.b states, "The new fuel storage racks (vault) are designed and shall be maintained with: . . . A nominal fuel assembly center to center spacing of 7.0 inches within rows and 12.25 inches between rows." To handle and inspect new ABB SVEA-96 fuel, the facility changed the configuration of the vault by adding physical barriers such that the fuel would be in a checkerboard pattern, thereby reducing the number of new fuel assemblies permitted in the vault to approximately half of the previous design. This arrangement was required and supported by the safety evaluation, "WNP-2 SVEA-96 Fuel Assemblies Dry Fuel Storage Criticality Safety Evaluation," performed by ABB. This analysis was performed to ensure that the change to the facility and operations would not present a criticality safety concern. Specifically, to handle the ABB SVEA-96 fuel, the licensee: (1) placed physical barriers within the new fuel vault to prevent loading new assemblies in certain cells (checkerboard pattern), (2) allowed new fuel assemblies to be raised above grade level while in the vault, (3) eliminated the requirement to have covers over the top of the fuel channels to form a barrier against mist (criticality concern), and (4) eliminated the limit for maximum fuel exposed. However, Technical Specification 4.3.1.2.b was never revised to be consistent with the changes.

   Failure to revise Technical Specification 4.3.1.2.b consistent with current design was the second example of a violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," which states, in part, measures shall be established to assure that the design basis is correctly translated into specifications and instructions. This Severity Level IV violation is being treated as an NCV, consistent with Appendix C of the NRC Enforcement Policy. This example is in the licensee's corrective action program as PER 299-1238 (50-397/9907-02).

2. FSAR Section 9.1.1.3.2 states, "lifting bail will yield at a pull-up force less than 1000 lb" to prevent a stuck fuel bundle from deforming the storage rack. The storage rack is designed to withstand a horizontal force of 1000 lbs and a pull-up force of 4000 lbs. The licensee informed the inspectors that Siemens and ABB fuel lifting bails would yield at a pull up force between 1500 and 1700 pounds and contacted GE for the specifications on GE fuel.

   Failure to translate FSAR requirements for lifting bail yield strength was a third example of a violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control" that states, in part, measures shall be established to assure that the design basis is correctly translated into specifications and instructions. This Severity Level IV violation is being treated as an NCV, consistent with

Appendix C of the NRC Enforcement Policy. This example is in the licensee's corrective action program as PER 299-1289 (50-397/9907-02).

FSAR Section 9.1.4.2.10.2 states, "The auxiliary hoist or jib crane equipped with the general purpose grapple is also used to transfer new fuel from the new fuel vault or inspection stand to the fuel prep machine . . . ." The jib crane is equipped with switches to limit lifted loads to 1000 pounds. However, the auxiliary crane has no such limit and is rated for 15 tons. Currently, Procedure 6.2.3, "New Fuel Handling on the Refueling Floor," Revision 16, uses the jib crane only for handling new fuel. The licensee initiated PER 299-1289 to address the issue.

3. FSAR Section 9.1.1.3.2, "New Fuel Rack Structural Design," describes design forces that the vault can withstand and also restricts operations near the vault to minimize the potential for a load falling on the vault, potentially causing damage to the vault and new fuel assemblies stored therein. These design and operating requirements ensure that the vault racks cannot be displaced in a manner causing critical spacing. The inspectors questioned use of the new fuel lifting basket (approximately 16 feet tall and capable of holding eight fuel bundles at approximately 600 pounds each) adjacent to the vault as potentially exceeding the vault design parameters if the basket were to fall over into the vault.

   The licensee informed the inspectors that the basket was not seismically qualified and initiated a change to Procedure 6.2.3 which stated, "To address the concern with the probability of the fuel basket toppling over . . . during a seismic event, the lifting basket should be tethered."

4. The inspectors identified an apparent administrative error in the FSAR, in that Section 9.1.1.3.2, "New Fuel Rack Structural Design," states, "The minimum edge-to-edge distance of the assembly array from adjacent walls is 16.75 inches between the edge of the C-14 storage rack and the shipping cask storage area wall." However, the new fuel rack is not adjacent to the shipping cask storage area. The statement was intended to address the spent fuel storage area and as such should be addressed in that section of the FSAR. The licensee initiated PER 299-1289 to address the issue. This failure constitutes a violation of minor significance and is not subject to formal enforcement action.

5. The inspectors observed on a plant tour that polyethylene plastic covers had been placed over new fuel in the new fuel vault. FSAR Section 9.1.1.3.1 states, "The fuel storage rack is designed using noncombustible materials. Plant procedures and inspections ensure that combustible materials are restricted from this area." The licensee informed the inspectors that the restriction was to eliminate the possibility of a fuel criticality during the process of extinguishing a fire and that it was no longer a concern with the new configuration of the vault. Additionally, the licensee informed the inspectors that a licensing document change had been performed to remove the restriction of combustibles along with other requirements from the FSAR.

However, the inspectors found that the licensing document change was approved by the acting plant manager a day after work had commenced (i.e., fuel in the vault with combustibles, etc.). Procedure 1.4.5, "Processing of Licensing Document Changes," Revision 16, Section 2.2.1.3, states, "LDCNs [Licensing Document Change Notices] that require procedure/program changes are incorporated into the licensing document concurrently with implementation of the procedure/program changes. . . . Following POC [Plant Operating Committee] review and Plant General Manager approval, ensure a copy of the LDCN is forwarded to the appropriate department for incorporation into appropriate licensing document." The licensee initiated PERs 299-1208 and 299-0771 to address the issue. This failure constitutes a violation of minor significance and is not subject to formal enforcement action.

c. Conclusions

Inconsistencies existed between the new fuel vault FSAR description, Technical Specifications, and current plant operations, specifically:

(1) Technical Specification 4.3.1.2.b allowed less restrictive spacing of new fuel assemblies in the new fuel vault than that required by plant procedures and analysis, and

(2) FSAR Section 9.1.1.3.2 stated "lifting bail will yield at a pull up force less than 1000 lb," however, Siemens and ABB fuel lifting bails yield at a pull up force between 1500 and 1700 pounds.

These were identified as two additional examples of a violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," in that the design basis was not correctly translated into specifications and instructions. This Severity Level IV violation is being treated as a NCV, consistent with Appendix C of the NRC Enforcement Policy. These examples are in the licensee's corrective action program as PERs 299-1238 and 299-1289.

The licensee's response to address concerns of potential new fuel and vault damage during a seismic event or handling error with the new fuel basket was conservative and prompt.

E1.3 New Fuel Handling and Inspection Activities

a. Inspection Scope (37551)

The inspectors observed the handling and inspection of new fuel on the 606 foot elevation of the reactor building. In addition, the inspectors reviewed portions of Procedures 6.2.3, "New Fuel Handling on the Refueling Floor, Revision 16; 6.2.4, "New Fuel Inspection," Revision 15; and 6.2.5, "New Channel Preparation, Inspection, & Installation on New Fuel," Revision 15. In addition, the inspectors reviewed several PERs generated by the licensee on the subject.

b. Observations and Findings

The licensee generally conducted new fuel handling and receipt, including moving new fuel into the spent fuel pool as required by applicable procedures. The licensee wrote three PERs to document negative performance issues regarding new fuel handling and inspection processes. The inspectors reviewed the corrective actions associated with the PERs and noted they were prompt and appropriate to the identified issues.

During a receipt inspection, facility fuel inspectors discovered that a channel fastener assembly external compression spring was missing from an ABB fuel assembly. Further inspection of that assembly revealed another compression spring missing several coils and was presumed broken. Other assemblies in the vault previously inspected were reinspected and one additional assembly was discovered with a missing compression spring. The facility documented these observations in PER 299-1161. New fuel receipt inspections do not normally look for manufacturing defects but are focused on potential damage caused by shipping. The potential exists that fuel assemblies already loaded in the spent fuel pool or already in the reactor may have missing springs. An unresolved item (50-397/9907-03) was identified to review the licensee's evaluation of the effects of missing or broken springs on the fuel assemblies during long-term operation. ABB was contacted by the licensee for assistance to resolve these issues.

c. Conclusions

The licensee identified and took appropriate corrective action for several new fuel handling and receipt process problems.

An unresolved item was identified related to a new fuel manufacturing defect. The licensee identified missing external compression springs on two new fuel assemblies. This item is unresolved pending NRC review of the facilities resolution of this condition.

E8 Miscellaneous Engineering Issues

E8.1 Review of Activities Associated With Computer Systems and Components (TI 2515/141)

A region-based reviewer conducted an abbreviated review of activities and documentation associated with assuring the readiness of computer systems and components using Temporary Instruction (TI) 2515/141, "Review of Year 2000 (Y2K) Readiness of Computer Systems at Nuclear Power Plants." The review addressed aspects of Y2K management planning, documentation, implementation planning, initial assessment, detailed assessment, remediation activities, Y2K testing and validation, notification activities, and contingency planning. The reviewer used NEI/NUSMG 97-07, "Nuclear Utility Year 2000 Readiness," and NEI/NUSMG 98-07, "Nuclear Utility Year 2000 Readiness Contingency Planning," as the primary references for this review.

The results of this review will be combined with the results of the reviews conducted at the other plants in the nation in a summary report to be issued by July 31, 1999.

IV. PLANT SUPPORT

R1 Radiological Protection and Chemistry Controls

R1.1 General Comments

a. Inspection Scope (71750)

The inspectors routinely toured the radiologically controlled areas and observed health physics (HP) personnel and radiation workers in the field. The inspectors also reviewed PERs associated with radiation work practices.

b. Observations and Findings

The inspectors walked down the plant and observed overall postings, radiological controls, and work practices. These observations included radiological controls associated with the unloading, inspection and movement of new fuel, containment and collection of rainwater in the turbine building, posting of main turbine work and staging areas, and postings of miscellaneous radiologically controlled areas.

In all cases, radiological controls were appropriate for the conditions observed, and personnel exhibited proper adherence to established practices. Health physics personnel were observed actively conducting precautionary surveys during overhead movement of potentially contaminated main turbine components as well as surveys in areas where rainwater could potentially spread loosened surface contamination.

The licensee identified an adverse trend in radiation worker practices and wrote PER 299-1086. The inspectors had noted the apparent increase in frequency of radiation work practice PERs but had not yet relayed that observation to the facility. Twenty-two PERs had been written since April 1, 1999. The majority of the PERs noted administrative errors on the part of contractor personnel during the fuel savings dispatch. An additional six PERs were written following the identification of the adverse trend. The licensee had taken immediate corrective action for each individual PER and were continuing to evaluate the adverse trend to identify additional compensatory actions as needed.

c. Conclusions

The inspectors observed that radiological controls were generally good and that the facility appropriately identified an adverse trend in contractor radiation work practices.

F8 Miscellaneous Fire Protection Issues

F8.1 Review of Plant Housekeeping During Plant Tours

a. Inspection Scope (92904)

The inspectors performed routine plant tours to evaluate housekeeping at the station.

b. Observations and Findings

The inspectors routinely observed housekeeping while conducting tours of all areas of the turbine, radiological waste, and reactor buildings. The inspectors' observations were conducted coincident to observations of maintenance, surveillance, and troubleshooting activities that were conducted during the outage.

The inspectors observed that, with only minor exceptions, maintenance work areas were maintained clean and orderly, with proper tool and combustible material stowage expectations met. Combustible-free zones were noted to be free of combustibles and proper portable ladder stowage and scaffolding securing were also consistently observed.

c. Conclusions

Plant housekeeping and was generally good.

V. MANAGEMENT MEETINGS

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management on June 17, 1999. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

P. J. Inserra, Licensing Manager
J. A. McDonald, Production Manager
W. S. Oxenford, Operations Manager
S. A. Boynton, Quality Assurance Manager
J. V. Parrish, Chief Executive Officer
D. C. Perry, Radiation Operations Supervisor
D. J. Poirier, Maintenance Manager
G. O. Smith, Vice President - Generation/Nuclear Plant General Manager
R. L. Webring, Vice President - Operations Support

INSPECTION PROCEDURES USED

IP 37551:	Onsite Engineering
IP 61726:	Surveillance Observations
IP 62707:	Maintenance Observations
IP 71707:	Plant Operations
IP 71750:	Plant Support
IP 92904:	Plant Support Followup
TI 2515-141:	Review of Year 2000 (Y2K) Readiness of Computer Systems at Nuclear Power Plants

ITEMS OPENED AND CLOSED

Opened and Closed

50-397/9907-01	NCV	two examples of a violation of Technical Specification 5.4.1: (1) failure to adequately monitor weir flow; and (2) failure to adequately monitor reactor pressure vessel level (Section O1.1).
50-397/9907-02	NCV	three examples of a violation of 10 CFR Part 50, Appendix B, Criterion III, Design Control: (1) incorrect overcurrent relay setpoints; (2) nonconservative new fuel vault Technical Specifications; and, (3) use of nonconservative lifting bail for new fuel (Sections E1.1 and E1.2).

Opened

50-397/9907-03	URI	analysis for potential effects on ABB fuel assemblies during long-term operation with missing or broken springs (Section E1.3).

LIST OF ACRONYMS USED

ABB	ASEA Brown Boveri
FSAR	Final Safety Analysis Report
IRB	Incident Review Board
LOCA	loss of coolant accident
LOP	loss of power
NCV	noncited violation
NRC	U.S. Nuclear Regulatory Commission
OI	operating instruction
PER	problem evaluation request
PMR	plant modification request
RCIC	reactor core isolation cooling
RHR	residual heat removal
RMCS	computerized record management system
RPV	reactor pressure vessel
TMR	temporary modification request
URI	unresolved item
WNP-2	Washington Nuclear Project-2